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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/520,464

09/07/2005

Akihito Yamasaki

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EXAMINER

ANGWIN, DAVID PATRICK

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/520,464	<b>Applicant(s)</b> YAMASAKI ET AL.	
	<b>Examiner</b> DAVID P. ANGWIN	<b>Art Unit</b> 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 37-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/7/05, 3/18/05, and 2/26/07</u> .                            | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### **Claim Rejections - 35 USC § 112**

The following is a quotation of the second paragraph of 35 U.S.C. §112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 37-72** are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically:

- a. **Claims 37, 46, 55, and 64** recite the following limitations that are vague, indefinite, and confusing (as mapped to claim 37):
- “is transferred” (claim 1, line 4) – It is unclear as to what is being transferred, a component or a component supply part.
  - “is mounted to a mounting point on the circuit board” (claim 1, line 5) – Similarly, it is unclear as to what is being mounted.
  - “by moving in X-axis and Y-axis directions” (claim 1, line 6) – It is unknown as to what is moving in the X and Y directions.
  - “component mounting path connecting the mounting points” (claim 1, line 11) – It is unclear as to the location and the distance of the mounting path because there is only one “mounting point” on a circuit board as recited in line 5. Since as claimed, the component mounting path connects the mounting points (plural), it is uncertain as to where the mounting points are. Further it is unclear whether the mounting points are on the same circuit board or located on a plurality of circuit boards. If the mounting points are on the same circuit board, then it is apparent that they are on different locations on the circuit board to define a component mounting path. However, it is then unclear as to how this would occur since the circuit board is disposed at the same location, i.e. “at the

component mounting position" (claim 1, lines 5-6). If the mounting points are on a plurality of circuit boards, the locations of these circuit boards are unknown because the claim recites only one circuit board (line 5). Moreover, it is unclear as to the exact relationship between the "arrangement of the component supply parts and a component mounting order" (claim 1, line 10) and the "mounting path connecting the mounting points" (line 11). Again, as claimed, there is no claimed relationship whatsoever between the mounting points and the arrangement of the component supply parts and a component mounting order. Therefore, it is impossible to determine the shortest mounting path in the three dimensional space.

- b. **Claims 38, 47, 56, and 65** recite the following limitations that are vague, indefinite, and confusing (as mapped to claim 38):

- "optimizing the arrangement of component supply parts" (line 3) – It is unclear what optimizing the arrangement component supply parts involves and what the optimum condition of the arrangement is.

**Claim Rejections - 35 USC § 102**

The following is a set of quotations of the appropriate paragraphs of 35 U.S.C.

§102 that form the basis for the rejections under this section made in this Office Action:

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 37-40, 45-49, 54-58, 63-66, and 71-72**, as best understood, are rejected under 35 U.S.C. § 102(b) as being anticipated by *Maenishi et al* (US Patent 6,289,582).

a. *Maenishi et al* discloses:

- i. representing the mounting point in a three dimensional space (Figs. 1-5), an arrangement of component supply parts (Figs. 1-5, items 4 and 4a), a component mounting order (Figs. 1-5), and a component mounting path connecting mounting points becoming the shortest (Figs. 1-5).
- ii. optimizing the arrangement of the component supply parts and component mounting paths, then after optimizing the component supply parts, rearranging them, including temporarily arranging the component supply parts, and determining the shortest path between two sets of mounting paths (8:26-39; Figs. 1-5; *the examiner notes that any movement in any direction of a component supply part or the components within the component supply parts constitutes an "arrangement" or "rearrangement" of the component supply part*).

In the alternative, **Claims 37-40, 45-49, 54-58, 63-66, and 71-72**, as best understood, are rejected under 35 U.S.C. § 102(e) as being anticipated by *Kuribayashi et al* (US Patent 7,020,956).

a. *Kuribayashi et al* discloses:

- i. representing the mounting point in a three dimensional space (Figs. 4, 8A-B, and 12), an arrangement of component supply parts (Fig. 4, items 116a-b), a component mounting order (Figs. 4, 5A-C, 6, 7, 8A-B, 9A-B, 10, and 12), and a component mounting path connecting mounting points becoming the shortest (Figs. 1-4, 5A-B, 6-7, 8A-B, 9A-B, and 11-12).
- ii. optimizing the arrangement of the component supply parts and component mounting paths, then after optimizing the component

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supply parts, rearranging them, including temporarily arranging the component supply parts, and determining the shortest path between two sets of mounting paths (Figs. 1-4, 5A-C, 6-7, 8A-B, 9A-B, and 11-12; *the examiner notes that the illustration shows components from the component supply parts being delivered; the examiner further notes that any movement in any direction of a component supply part or the components within the component supply parts constitutes an "arrangement" or "rearrangement" of the component supply part*).

**Claim Rejections – 35 USC § 103**

The following is a quotation of 35 U.S.C. § 103(a) that forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically taught or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. § 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 41-44, 50-53, 59-62, and 67-70**, as best understood, are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maenishi et al* (US Patent 6,289,582) or

*Kuribayashi et al* (US Patent 7,020,956) in view of *Minerath III et al* (US Patent 7,066,006).

- a. In addition to the above limitations, *Minerath III et al* teaches:
  - i. optimizing an arrangement of data points is executed by measuring variances for spatial values showing locations of the data points (10:43-56).
  - ii. The advantage of optimizing an arrangement of data points by obtaining the variances is to statistically analyze the arrangement of spatial data.
  - iii. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify:
    - 1. a component mounting method with component mounting locations recorded as spatial coordinates that does not expressly include optimizing the variances as disclosed by *Kuribayashi et al*; with
    - 2. a well known statistical tool that includes optimizing an arrangement of spatial data points by obtaining the variances of the data points as taught by *Minerath III et al*;  
to statistically analyze the arrangement of spatial data.
  - iv. In the alternative, the examiner takes official notice that optimizing an arrangement of data points by measuring variances for spatial

values and obtaining the product of the components is well known in the art of statistical analysis.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David P. Angwin, whose telephone number is (571) 270-3735. The examiner can normally be reached on 7:30 AM - 5 PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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